Amendments to the Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended)   A computer-implemented method for generating a library design for a combinatorial library of materials, comprising:

defining one or more sources and one or more destinations, each source being electronic data representing a component to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells;

receiving ~~an~~ user input defining a first mapping, the first mapping being electronic data defining a distribution pattern for assigning a component represented by one of the defined sources to a plurality of cells in the ~~arrangement~~ arrangements represented by the defined destinations, the ~~distribution pattern including~~ input specifying a set of gradient parameters defining a minimum and a maximum amount of the component to be assigned to any of the plurality of cells ~~cell~~ of the ~~arrangement~~ arrangements and a gradient to be applied between the minimum and maximum amounts of the component across the plurality of cells;

~~using the first mapping to calculate a composition of one or more materials assigned to one or more of the cells~~; and

generating a representation of the library design, the representation comprising electronic data representing the sources, the destinations and the first mapping.

2. (Currently Amended)   The method of claim 1, further comprising:

using the first mapping to calculate a composition of one or more materials assigned to one or more of the cells; and

displaying a visual representation of the library design, the visual representation graphically describing the composition of one or more materials assigned to one or more of the cells.

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3. (Previously Presented)   The method of claim 1, wherein the representation comprises electronic data representing one or more sets of properties, each set of properties being associated with one of the sources, the destinations or the mapping.

4. (Original) The method of claim 1, wherein defining the sources and destinations comprises receiving an input from a graphical input device.

5. (Currently Amended)   The method of claim 1, wherein the input defining a first mapping comprises a selection from a set of available mapping types, the set of available mapping types comprising a one to one mapping of a component from a source to a cell in the ~~arrangement~~ arrangements and a one to many mapping of a component from a source to a plurality of cells in the ~~arrangement~~ arrangements.

6. (Currently Amended)   The method of claim 5, wherein the set of available mapping types further comprises a many to many mapping of a plurality of components from a plurality of sources to a plurality of cells in the ~~arrangement~~ arrangements.

7. (Currently Amended)   The method of claim 6, wherein the set of available mapping types further comprises a many to one mapping of a plurality of components from a plurality of sources to a cell in the ~~arrangement~~ arrangements.

8. (Original) The method of claim 5, wherein the set of available mapping types further comprises a set of one or more user-defined equations.

9. (Original) The method of claim 1, wherein the gradient is selected from the group consisting of linear, logarithmic, exponential, polynomial and geometric progression.

10. (Original) The method of claim 3, wherein the set of properties associated with the mapping comprises a source name, a source geometry, a destination name, a destination geometry, a gradient type, and a set of gradient parameters defining the gradient.

11. (Currently Amended)   The method of claim 1, further comprising:

receiving ~~an~~ <u>second user</u> input defining a second mapping, the second mapping being electronic data defining a second distribution pattern for distributing a second component to cells in the ~~arrangement~~ <u>arrangements</u>; ~~and~~

~~using the first and second mappings to calculate a composition of one or more materials assigned to one or more of the cells~~

<u>wherein generating a representation of the library design includes generating a representation comprising electronic data representing the sources, the destinations and the first and second mappings.</u>

12. (Currently Amended) The method of claim 11, wherein the second distribution pattern for assigning a second component includes electronic data identifying a fixed amount of the second component to be assigned to one or more cells in the ~~arrangement~~ <u>arrangements</u>.

13. (Currently Amended) The method of claim ~~12~~ <u>11</u>, wherein the second ~~distribution pattern for assigning a second component includes electronic data identifying~~ <u>input specifies a set of gradient parameters defining</u> a minimum and a maximum amount of the second component to be assigned to ~~any~~ <u>a second plurality</u> of ~~the~~ cells of the ~~arrangement~~ <u>arrangements</u> and a second gradient to be applied between the minimum and maximum amounts of the second component across the <u>second plurality of</u> cells.

14. (Currently Amended) The method of claim 1, further comprising generating a modified library design by:

receiving ~~an~~ <u>user</u> input redefining a source, a destination or a mapping;

~~recalculating the composition of one or more materials assigned to one or more of the cells;~~ and

generating a representation of the modified library design.

15. (Currently Amended) The method of claim 1, further comprising:

receiving ~~an~~ <u>user</u> input defining one or more <u>process</u> parameters, each <u>process</u> parameter being electronic data corresponding to a process parameter to be applied to one or more cells of

the ~~arrangement~~ arrangements and defining a parameter value for the one or more cells of the ~~arrangement~~ arrangements, the parameter value varying between a minimum and a maximum amount; and

wherein the representation further comprises electronic data representing the one or more process parameters.

16. (Currently Amended)   The method of claim 1, wherein the ~~arrangement comprises~~ arrangements comprise two or more cells.

17. (Currently Amended)   The method of claim 1, wherein the ~~arrangement comprises~~ arrangements comprise ten or more cells.

18. (Currently Amended)   The method of claim 1, wherein the ~~arrangement comprises~~ arrangements comprise about ninety-six or more cells.

19. (Currently Amended)   A computer-implemented method for generating a library design for a combinatorial library of materials, comprising:

defining a set of one or more sources and one or more destinations, each source being electronic data representing a component to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells;

receiving ~~an~~ user input defining a set of first mappings, the ~~first mappings being electronic data defining~~ input specifying a set of equations for calculating an amount of one or more components represented by the defined sources to be assigned to one or more cells in ~~an arrangement~~ the arrangements represented by the defined destinations;

~~using the set of equations to calculate a composition of a material assigned to one or more of the cells;~~ and

generating a representation of the library design, the representation comprising electronic data representing the sources, the destinations and the first mappings.

20. (Currently Amended)   The method of claim 19, further comprising:

using the first mappings to calculate a composition of one or more materials assigned to

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one or more of the cells; and

displaying a visual representation of the library design, the visual representation graphically describing the composition of one or more materials assigned to one or more of the cells.

21. (Currently Amended)   The method of claim 19, wherein the component to be assigned to a cell in the arrangement is determined by the location of the cell within the corresponding arrangement.

22. (Currently Amended)   The method of claim 21, wherein the composition of a material is determined using a subset of the set of equations, the subset of equations being determined by the location of the cell within the corresponding arrangement.

23. (Original) The method of claim 19, further comprising:

generating an error indicator signal if the number of equations in the set of equations is not equal to the number of sources in the set of sources.

24. (Original) The method of claim 19, wherein at least one of the set of equations is selected from the group consisting of:

a ratio equation defining an amount of a component to be assigned to a cell as a function of an amount of another component to be assigned to the cell;

a volume equation defining an amount of a component to be assigned to a cell as a function of a total volume of a plurality of components to be assigned to the cell; and

a mass equation defining an amount of a component to be assigned to a cell as a function of a total mass of a plurality of components to be assigned to the cell.

25. (Original) The method of claim 19, wherein the set of equations comprises a gradient equation defining an amount of a component to be assigned to each of a plurality of cells according to a gradient.

26. (Currently Amended)   The method of claim 19, wherein each of the set of

equations is assigned to one or more cells of the ~~arrangement~~ arrangements according to the location of the cells within the ~~arrangement~~ arrangements.

27. (Original) The method of claim 19, wherein using the set of equations to calculate a composition of a material assigned to one or more of the cells comprises simultaneously solving a set of interdependent equations.

28. (Original) The method of claim 27, wherein using the set of equations further comprises using a matrix inversion technique to solve the set of equations.

29. (Currently Amended)　　The method of claim 19, further comprising:

receiving an input defining a second mapping, the second mapping being electronic data defining a distribution pattern for distributing a component to cells in the ~~arrangement~~ arrangements, the distribution pattern including a minimum and a maximum amount of the component to be assigned to any ~~cell~~ of ~~the~~ a plurality of cells of the ~~arrangement~~ arrangements and a gradient to be applied between the minimum and maximum amounts of the component across the plurality of cells; ~~and~~

~~using the first set of mappings and the second mapping to calculate a composition of a material assigned to one or more of the cells~~

wherein generating a representation of the library design includes generating a representation comprising electronic data representing the sources, the destinations, the first set of mappings and the second mapping.

30. (Currently Amended)　　A computer-implemented method for generating a library design for a combinatorial library of materials, comprising:

defining a set of one or more sources and one or more destinations, each source being electronic data representing a component to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells;

defining a plurality of mappings from the defined sources to the defined destinations, the mappings in the aggregate defining a composition for each of a plurality of materials assigned to

a plurality of cells in the ~~arrangement~~ <u>arrangements represented by the defined destinations</u>;

receiving an input defining one or more parameters, each parameter being electronic data corresponding to a process parameter to be applied to one or more cells of the ~~arrangement~~ <u>arrangements</u> and defining a parameter value for the one or more cells of the ~~arrangement~~ <u>arrangements</u>, the parameter value varying between a minimum and a maximum amount; and

generating a representation of the library design, the representation comprising electronic data describing the source elements, the destination elements, the mappings and the parameters.

31. (Original) The method of claim 30, wherein the parameter value is defined to vary over time.

32. (Currently Amended)   The method of claim 30, wherein the parameter value is defined to vary across two or more cells in the ~~arrangement~~ <u>arrangements</u>.

33. (Currently Amended)   The method of claim 30, wherein the parameter value is defined to vary over time and across two or more cells in the ~~arrangement~~ <u>arrangements</u>.

34. (Original) The method of claim 30, wherein the parameter value varies according to a gradient selected from the group consisting of linear, logarithmic, exponential, polynomial and geometric progression.

35. (Original) The method of claim 30, wherein the parameter value corresponds to a process parameter selected from the group consisting of temperature, pressure, time, flow rate and stirring speed.

36. (Cancelled).

37. (Currently Amended)   A computer program product on a computer-readable medium for generating a library design for a combinatorial library of materials, the computer program product comprising instructions operable to cause a programmable processor to:

receive an input defining one or more sources and one or more destinations, each source

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being electronic data representing a component to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells;

receive ~~an~~ <u>user</u> input defining a first mapping, the first mapping being electronic data defining a distribution pattern for assigning a component <u>represented by one of the defined sources</u> to <u>a plurality of</u> cells in the ~~arrangement~~ <u>arrangements represented by the defined destinations</u>, the ~~distribution pattern including~~ <u>input specifying a set of gradient parameters defining</u> a minimum and a maximum amount of the component to be assigned to any <u>of the plurality of cells</u> ~~cell~~ of the ~~arrangement~~ <u>arrangements</u> and a gradient to be applied between the minimum and maximum amounts of the component across the plurality of cells;

~~use the first mapping to calculate a composition of one or materials assigned to one or more of the cells;~~ and

generate a representation of the library design, the representation comprising electronic data representing the sources, the destinations and the <u>first</u> mapping.

38. (Currently Amended) The computer program product of claim 37, further comprising instructions operable to cause a programmable processor to:

<u>use the first mapping to calculate a composition of one or more materials assigned to one or more of the cells; and</u>

display a visual representation of the library design, the visual representation graphically describing the composition of one or more materials assigned to one or more of the cells.

39. (Previously Presented) The computer program product of claim 37, wherein the representation comprises electronic data representing one or more sets of properties, each set of properties being associated with one of the sources, the destinations or the mapping.

40. (Previously Presented) The computer program product of claim 37, wherein the input defining the sources and destinations comprises an input from a graphical input device.

41. (Currently Amended) The computer program product of claim 37, wherein the input defining a first mapping comprises a selection from a set of available mapping types, the

set of available mapping types comprising a one to one mapping of a component from a source to a cell in the ~~arrangement~~ <u>arrangements</u> and a one to many mapping of a component from a source to a plurality of cells in the ~~arrangement~~ <u>arrangements</u>.

42. (Currently Amended)   The computer program product of claim 41, wherein the set of available mapping types further comprises a many to many mapping of a plurality of components from a plurality of sources to a plurality of cells in the ~~arrangement~~ <u>arrangements</u>.

43. (Currently Amended)   The computer program product of claim 42, wherein the set of available mapping types further comprises a many to one mapping of a plurality of components from a plurality of sources to a cell in the ~~arrangement~~ <u>arrangements</u>.

44. (Previously Presented)   The computer program product of claim 40, wherein the set of available mapping types further comprises a set of one or more user-defined equations.

45. (Previously Presented)   The computer program product of claim 37, wherein the gradient is selected from the group consisting of linear, logarithmic, exponential, polynomial and geometric progression.

46. (Previously Presented)   The computer program product of claim 39, wherein the set of properties associated with the mapping comprises a source name, a source geometry, a destination name, a destination geometry, a gradient type, and a set of gradient parameters defining the gradient.

47. (Currently Amended)   The computer program product of claim 37, further comprising instructions operable to cause a programmable processor to:

receive ~~an~~ <u>second user</u> input defining a second mapping, the second mapping being electronic data defining a second distribution pattern for distributing a second component to cells in the ~~arrangement~~ <u>arrangements</u>; ~~and~~

~~use the first and second mappings to calculate a composition of one or more materials~~
~~assigned to one or more of the cells~~

wherein the instructions operable to cause a programmable processor to generate a representation of the library design include instructions operable to cause a programmable processor to generate a representation comprising electronic data representing the sources, the destinations and the first and second mappings.

48. (Currently Amended)   The computer program product of claim 47, wherein the second distribution pattern for assigning a second component includes electronic data identifying a fixed amount of the second component to be assigned to one or more cells in the ~~arrangement~~ arrangements.

49. (Currently Amended)   The computer program product of claim 48, wherein the second ~~distribution pattern for assigning a second component includes electronic data identifying~~ input specifies a set of gradient parameters defining a minimum and a maximum amount of the second component to be assigned to ~~any~~ a second plurality of ~~the~~ cells of the ~~arrangement~~ arrangements and a second gradient to be applied between the minimum and maximum amounts of the second component across the second plurality of cells.

50. (Currently Amended)   The computer program product of claim 37, further comprising instructions operable to cause a programmable processor to generate a modified library design by receiving an input redefining a source, a destination or a mapping; ~~recalculating the composition of one or more materials assigned to one or more of the cells;~~ and generating a representation defining the modified library design.

51. (Currently Amended)   The computer program product of claim 37, further comprising instructions operable to cause a programmable processor to:

receive an input defining one or more process parameters, each process parameter being electronic data corresponding to a process parameter to be applied to one or more cells of the ~~arrangement~~ arrangements and defining a parameter value for the one or more cells of the ~~arrangement~~ arrangements, the parameter value varying between a minimum and a maximum amount; and

wherein the representation further comprises electronic data representing the one or more process parameters.

52. (Currently Amended)   The computer program product of claim 37, wherein the ~~arrangement comprises~~ arrangements comprise two or more cells.

53. (Currently Amended)   The computer program product of claim 37, wherein the ~~arrangement comprises~~ arrangements comprise ten or more cells.

54. (Currently Amended)   The computer program product of claim 37, wherein the ~~arrangement comprises~~ arrangements comprise about ninety-six or more cells.

55. (Currently Amended)   A computer program product on a computer-readable medium for generating a library design for a combinatorial library of materials, the computer program product comprising instructions operable to cause a programmable processor to:
receive ~~an~~ user input defining a set of one or more sources and one or more destinations, each source being electronic data representing a component to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells;
receive ~~an~~ user input defining a set of first mappings, the ~~first mappings being electronic data defining~~ input specifying a set of equations for calculating an amount of one or more components represented by the defined sources to be assigned to one or more cells in ~~an arrangement~~ the arrangements represented by the defined destinations;
~~use the set of equations to calculate a composition of a material assigned to one or more of the cells;~~ and
generate a representation of the library design, the representation comprising electronic data representing the sources, the destinations and the first mappings.

56. (Currently Amended)   The computer program product of claim 55, further comprising instructions operable to:
use the first mappings to calculate a composition of one or more materials assigned to

one or more of the cells; and

display a visual representation of the library design, the visual representation graphically describing the composition of one or more materials assigned to one or more of the cells.

57. (Currently Amended)   The computer program product of claim 55, wherein the component to be assigned to a cell in the arrangement is determined by the location of the cell within the corresponding arrangement.

58. (Currently Amended)   The computer program product of claim 57, wherein the composition of a material is determined using a subset of the set of equations, the subset of equations being determined by the location of the cell within the corresponding arrangement.

59. (Previously Presented)   The computer program product of claim 55, further comprising instructions operable to:

generate an error indicator signal if the number of equations in the set of equations is not equal to the number of sources in the set of sources.

60. (Previously Presented)   The computer program product of claim 55, wherein at least one of the set of equations is selected from the group consisting of:

a ratio equation defining an amount of a component to be assigned to a cell as a function of an amount of another component to be assigned to the cell;

a volume equation defining an amount of a component to be assigned to a cell as a function of a total volume of a plurality of components to be assigned to the cell; and

a mass equation defining an amount of a component to be assigned to a cell as a function of a total mass of a plurality of components to be assigned to the cell.

61. (Previously Presented)   The computer program product of claim 55, wherein the set of equations comprises a gradient equation defining an amount of a component to be assigned to each of a plurality of cells according to a gradient.

62. (Currently Amended)   The computer program product of claim 55, wherein each

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of the set of equations is assigned to one or more cells of the ~~arrangement~~ arrangements according to the location of the cells within the ~~arrangement~~ arrangements.

63. (Previously Presented)   The computer program product of claim 55, wherein the instructions operable to cause a programmable processor to use the set of equations to calculate a composition of a material assigned to one or more of the cells comprise instructions simultaneously to solve a set of interdependent equations.

64. (Previously Presented)   The computer program product of claim 63, wherein the instructions simultaneously to solve the set of interdependent equations further comprise instructions to use a matrix inversion technique to solve the set of equations.

65. (Currently Amended)   The computer program product of claim 55, further comprising instructions operable to:

receive an input defining a second mapping, the second mapping being electronic data defining a distribution pattern for distributing a component to cells in the ~~arrangement~~ arrangements, the distribution pattern including a minimum and a maximum amount of the component to be assigned to any ~~cell~~ of ~~the~~ a plurality of cells of the arrangement and a gradient to be applied between the minimum and maximum amounts of the component across the plurality of cells; ~~and~~

~~use the first set of mappings and the second mapping to calculate a composition of a material assigned to one or more of the cells~~

wherein the instructions operable to cause a programmable processor to generate a representation of the library design include instructions operable to cause a programmable processor to generate a representation comprising electronic data representing the sources, the destinations, the first set of mappings and the second mapping.

66. (Currently Amended)   A computer program product on a computer-readable medium for generating a library design for a combinatorial library of materials, the computer program product comprising instructions operable to cause a programmable processor to:

receive ~~an~~ <u>user</u> input defining a set of one or more sources and one or more destinations, each source being electronic data representing a component to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells;

receive ~~an~~ <u>user</u> input defining a plurality of mappings <u>from the defined sources to the defined destinations</u>, the mappings in the aggregate defining a composition for each of a plurality of materials assigned to a plurality of cells in the ~~arrangement~~ <u>arrangements represented by the defined destinations</u>;

receive an input defining one or more parameters, each parameter being electronic data corresponding to a process parameter to be applied to one or more cells of the ~~arrangement~~ <u>arrangements</u> and defining a parameter value for the one or more cells of the ~~arrangement~~ <u>arrangements</u>, the parameter value varying between a minimum and a maximum amount; and

generate a representation of the library design, the representation comprising electronic data describing the source elements, the destination elements, the mappings and the parameters.

67. (Previously Presented)   The computer program product of claim 66, wherein the parameter value is defined to vary over time.

68. (Currently Amended)   The computer program product of claim 66, wherein the parameter value is defined to vary across two or more cells in the ~~arrangement~~ <u>arrangements</u>.

69. (Currently Amended)   The computer program product of claim 66, wherein the parameter value is defined to vary over time and across two or more cells in the ~~arrangement~~ <u>arrangements</u>.

70. (Previously Presented)   The computer program product of claim 66, wherein the parameter value varies according to a gradient selected from the group consisting of linear, logarithmic, exponential, polynomial and geometric progression.

71. (Previously Presented)   The computer program product of claim 66, wherein the parameter value corresponds to a process parameter selected from the group consisting of

temperature, pressure, time, flow rate and stirring speed.

72. (Cancelled).

73. (Previously Presented)   The method of claim 1, wherein:

each of the sources has an associated set of source properties describing the source; and

defining the sources comprises receiving for each of the sources a set of values for one or

more of the source properties associated with the source.

74. (Previously Presented)   The method of claim 73, wherein:

at least one of the source properties is selected from the group consisting of molecular

weight, equivalents, density and concentration.

75. (Previously Presented)   The method of claim 73, wherein:

at least one of the source properties is a type describing a class of chemicals to be used in

generating the library design.

76. (Previously Presented)   The computer program product of claim 37, wherein:

each of the sources has an associated set of source properties describing the source; and

the instructions operable to cause a programmable processor to define the sources include

instructions operable to cause a programmable processor to receive for each of the sources a set

of values for one or more of the source properties associated with the source.

77. (Previously Presented)   The computer program product of claim 76, wherein:

at least one of the source properties is selected from the group consisting of molecular

weight, equivalents, density and concentration.

78. (Previously Presented)   The computer program product of claim 76, wherein:

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at least one of the source properties is a type describing a class of chemicals to be used in generating the library design.